Express Mail Label No. EL515091077US 03-17-00

jc713 U.S. PTO 03/16/00

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No. INTL-0359-P1-US (P7596X)
Total Pages in this Submission 26

A

TO THE ASSISTANT COMMISSIONER FOR PATENTS
Box Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

CONTROLLING WIRELESS PERIPHERALS FOR PROCESSOR-BASED SYSTEMS

jc511 U.S. PTO 09/526780 03/16/00

and invented by:

EDWARD O. CLAPPER

If a CONTINUATION APPLICATION, *check appropriate box and supply the requisite information:*

☐ **Continuation** ☐ **Divisional** ☒ **Continuation-in-part (CIP)** of prior application No.: **09/405,575**

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: _____

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: _____

Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having **11** pages and including the following:
   - a. ☒ Descriptive Title of the Invention
   - b. ☒ Cross References to Related Applications *(if applicable)*
   - c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
   - d. ☐ Reference to Microfiche Appendix *(if applicable)*
   - e. ☒ Background of the Invention
   - f. ☐ Brief Summary of the Invention
   - g. ☒ Brief Description of the Drawings *(if drawings filed)*
   - h. ☒ Detailed Description
   - i. ☒ Claim(s) as Classified Below
   - j. ☒ Abstract of the Disclosure

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
INTL-0359-P1-US (P7596X)
Total Pages in this Submission
26

Application Elements (Continued)

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
   - a. ☒ Formal — Number of Sheets 4
   - b. ☐ Informal — Number of Sheets _____

4. ☒ Oath or Declaration
   - a. ☒ Newly executed *(original or copy)* ☐ Unexecuted
   - b. ☐ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*
   - c. ☒ With Power of Attorney ☐ Without Power of Attorney
   - d. ☐ *DELETION OF INVENTOR(S)*
     Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. 1.63(d)(2) and 1.33(b).

5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*
   The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. ☐ Computer Program in Microfiche *(Appendix)*

7. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*
   - a. ☐ Paper Copy
   - b. ☐ Computer Readable Copy *(identical to computer copy)*
   - c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☒ Assignment Papers *(cover sheet & document(s))*

9. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*

10. ☐ English Translation Document *(if applicable)*

11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations

12. ☐ Preliminary Amendment

13. ☒ Acknowledgment postcard

14. ☒ Certificate of Mailing

    ☐ First Class ☒ Express Mail *(Specify Label No.):* EL515091077US

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
INTL-0359-P1-US (P7596X)
Total Pages in this Submission
26

Accompanying Application Parts (Continued)

15. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*

16. ☐ Additional Enclosures *(please identify below):*

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra		Rate	Fee
Total Claims	17	- 20 =	0	x	$18.00	$0.00
Indep. Claims	2	- 3 =	0	x	$78.00	$0.00
Multiple Dependent Claims (check if applicable) ☐						$0.00
					BASIC FEE	$690.00
OTHER FEE *(specify purpose)* _____						$0.00
					TOTAL FILING FEE	$690.00

☒ A check in the amount of **$690.00** to cover the filing fee is enclosed.

☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **20-1504** as described below. A duplicate copy of this sheet is enclosed.

- ☐ Charge the amount of as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Signature

Dated: **March 16, 2000**

Timothy N. Trop, Reg. No. 28,994
Trop, Pruner & Hu, P.C.
8554 Katy Freeway, Suite 100
Houston, Texas 77024
(713) 468-8880 [Phone]
(713) 468-8883 [Fax]

cc:

APPLICATION

FOR

UNITED STATES LETTERS PATENT

TITLE: CONTROLLING WIRELESS PERIPHERALS FOR PROCESSOR-BASED SYSTEMS

INVENTORS: EDWARD O. CLAPPER

Express Mail No.: EL515091077US

Date: March 16, 2000

CONTROLLING WIRELESS PERIPHERALS FOR PROCESSOR-BASED SYSTEMS

This application is a continuation-in-part of U.S. patent application Serial No. 09/405,575 filed September 27, 1999.

Background

This invention relates generally to processor-based systems and particularly to wireless peripheral devices for use in controlling such systems.

Wireless keyboards, wireless mice and wireless remote control units may provide input signals to a processor-based system. For example, wireless keyboards and wireless mice may be utilized to control conventional desktop computer systems. Similarly, remote control units may be utilized to control processor-based systems such as set-top boxes which operate in conjunction with a conventional television receiver. Wireless peripherals may be advantageous because they do not tether the user to the processor-based system. In some cases, the user may operate the processor-based system from a considerable distance.

Conventionally, wireless peripheral devices have a dedicated function. Thus, the user who desires to control a processor-based system using wireless technology may have

a separate mouse and a separate keyboard for that system. In the case of a set-top box, the user may have a wireless mouse, a wireless keyboard and a wireless remote control unit for controlling television and computer functions.

Thus, there is a continuing need for better ways to use wireless peripherals for controlling processor-based systems.

Brief Description of the Drawings

Fig. 1 is a perspective view of one embodiment of the present invention in a first orientation;

Fig. 2 is a bottom plan view of the embodiment shown in Fig. 1 in a different orientation;

Fig. 3 is a top plan view of the embodiment of Fig. 1 in still another orientation; and

Fig. 4 is a schematic depiction for one embodiment of the invention.

Detailed Description

A wireless peripheral device 10, shown in Figure 1, for use with a processor-based system (not shown in Figure 1) includes at least one keyboard 12 having keys which may be utilized to generate input commands for a processor-based system. The wireless peripheral device 10 may include a first wireless interface 16 and a second wireless interface 18.

In one embodiment of the present invention, a single keyboard, such as the keyboard 12, may be provided. Operation of the same key may result in the generation of a different command through each interface 16 and 18. In one embodiment of the present invention, each of the interfaces 16 and 18 points more directly at the processor-based system when the device 10 is in an orientation dedicated to a function implemented by a particular interface 16 or 18.

That is, depending on the orientation of the device 10, one of the interfaces 16 or 18 is pointed at a receiver on a processor-based system and the other of the interfaces is pointed away from the receiver. If the power of the interface is not too great, the signal from the interface pointed directly at the receiver will be recognized by the receiver and the signal from the other interface will be ignored.

The interfaces 16 and 18 advantageously develop signals which are at least 45 degrees apart to avoid simultaneous reception of both signals by the same receiver. Advantageously, the interfaces 16 and 18 are angularly separated by approximately 90 degrees or more.

In other embodiments of the present invention, two separate keyboards may be provided, for example, on opposite sides of the device 10. Thus, in one embodiment of the present invention, a keyboard 12 may be provided on one side and a keyboard 14 may be provided on the other

side. The keyboard 14 may operate the interface 18 and the keyboard 12 may operate the interface 16.

In one embodiment of the present invention, the device 10 implements the functions of a remote control unit and a keyboard. However, it may also be possible to provide a mouse functionality as well. For example, any combination of a remote control unit, keyboard or mouse functionality may be incorporated on two sides of the device. Alternatively, a third interface may be provided on a separate surface of the device 10. In such case, in one orientation the device acts as a mouse, in another orientation the device acts as a keyboard and in still another orientation the device may act as a remote control unit.

A different set of keys 20 may be provided, in one embodiment of the present invention, to implement each desired functionality. Thus, with the device 10 positioned upside down as shown in Figure 2, the keyboard 14 may be exposed and the interface 18 may be directed towards the controlled processor-based receiver 27. In one embodiment of the present invention, a reduced sized keyboard 14, such as a qwerty keyboard, may be utilized to provide a compact arrangement. Other known reduced format keyboards may be utilized as well. Thus, with the device 10 in the orientation shown in Figure 2, keyboard commands, indicated

by the signal A, are issued through the interface 18 to the processor-based receiver 27.

At the same time commands inadvertently entered on the keyboard 12 are developed by the interface 16. However, since the interface 16 is angled away from the receiver 27, they are not received at the receiver 27. Thus, with the keys 20 oriented properly relative to the user, the interface 18 is automatically aligned to control the receiver 27. Conversely, the interface 16, controlled by the keyboard 12 is misaligned relative to the receiver 27.

In the orientation shown in Figure 3, the keyboard 12 is upwardly pointing and the interface 16 is directed toward the processor-based receiver 27. As a result, the signal B issued by the device 10 is detected by the processor-based receiver 27 and is utilized as an input command.

The signal provided by the interface 18 is directed transversely relative to the receiver 27 when the keyboard 12 is oriented properly relative to the user. In such case, the signal from the interface 18 does not control the receiver 27.

The keyboard 12 implementing a remote control unit in one embodiment may include a plurality of numerical keys 26, arrow buttons 22 for moving an on-screen cursor and a selection button 24 situated in between the arrow buttons 22. Other buttons may be provided as well.

Thus, the user can reorient a single device and can thereby automatically obtain two or more functionalities from the same device 10. In some cases, two keyboards may be provided on opposed sides but in other cases, a single keyboard may provide different functionalities depending on its orientation.

Thus, referring to Figure 4, a processor-based system 27 may include a processor 28 coupled to an interface 30. The interface 30, for example, may be a chipset or a bridge. The interface 30 may couple to a bus 38, a system memory 32, and a display controller 34. A display controller 34 may in turn be coupled to a display 36 which may be a television receiver.

The bus 38 may be coupled to a serial input/output (SIO) device 48, a storage device 40 which stores software 68 and a basic input/output system (BIOS) 42. The SIO 48 may be coupled to an interface 47 which receives input signals from the interfaces 16 and 18 of the wireless peripheral device 10. Only one interface 16 or 18 communicates with the interface 47 depending on the orientation of the device 10.

The device 10 may have two keyboards 12 and 14 coupled through a processor-based controller 41 in one embodiment of the invention. The controller 41 communicates with the wireless interfaces 16 and 18.

While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

What is claimed is:

1. A wireless peripheral for a receiver comprising:

a housing;

a keyboard defined on said housing; and

a pair of wireless interfaces that transmit wireless signals directed at sufficiently spaced angles with respect to one another to enable said receiver to distinguish one of said signals from the other of said signals.

2. The peripheral of claim 1 wherein said housing includes a pair of opposed sides, a keyboard being situated on each of said sides.

3. The peripheral of claim 2 including a wireless interface associated with each of said keyboards.

4. The peripheral of claim 2 wherein one of said keyboards operates as a remote control unit and the other of said keyboards operates as a text entry keyboard.

5. The peripheral of claim 4 wherein said text entry keyboard is a qwerty keyboard.

6. The peripheral of claim 1 including a controller coupled to said interfaces and said keyboard.

7. The peripheral of claim 6 wherein said wireless interfaces are infrared interfaces.

8. The peripheral of claim 1 wherein said interfaces are angled sufficiently such that only one of said signals is detected by said receiver.

9. The peripheral of claim 8 wherein said interfaces are oriented to generate wireless signals at an angle of greater than 45° from one another.

10. The peripheral of claim 1 wherein said keyboard has at least two different orientations, such that when said keyboard is arranged relative to a user in each of said orientations, a different one of said interfaces is aligned with said receiver.

11. A method comprising:

providing at least two modes for a wireless device; and

selecting one of said modes for said wireless device based on the orientation of said wireless device.

12. The method of claim 11 including using said wireless device to control a processor-based system.

13. The method of claim 12 including providing a housing having sides and a keyboard on each side of said housing and controlling said processor-based system from one of said keyboards depending on the orientation of the keyboard with respect to the user.

14. The method of claim 13 including providing a pair of wireless interfaces angularly oriented with respect to each other on said housing, each of said interfaces associated with a keyboard.

15. The method of claim 14 including controlling a television receiver.

16. The method of claim 15 including providing remote control unit commands in one orientation of said device and providing text entry commands in another orientation of said device.

17. The method of claim 12 including providing a pair of wireless interfaces each oriented at an angle with respect to one another such that when the device is used in one of two orientations, a different interface is automatically aligned with the system.

CONTROLLING WIRELESS PERIPHERALS
FOR PROCESSOR-BASED SYSTEMS

Abstract of the Disclosure

A wireless peripheral may include at least one keyboard and at least two key orientations. In one embodiment of the present invention, a pair of keyboards may be provided on opposite sides of the wireless peripheral. Each of said keyboards may drive a separate interface. The interfaces may be oriented on the peripheral so that when a particular key orientation is chosen for use by orienting the peripheral appropriately, its associated interface is aligned with a processor-based system which receives commands from the peripheral. Thus, the effect of the wireless peripheral may be changed depending on its orientation.

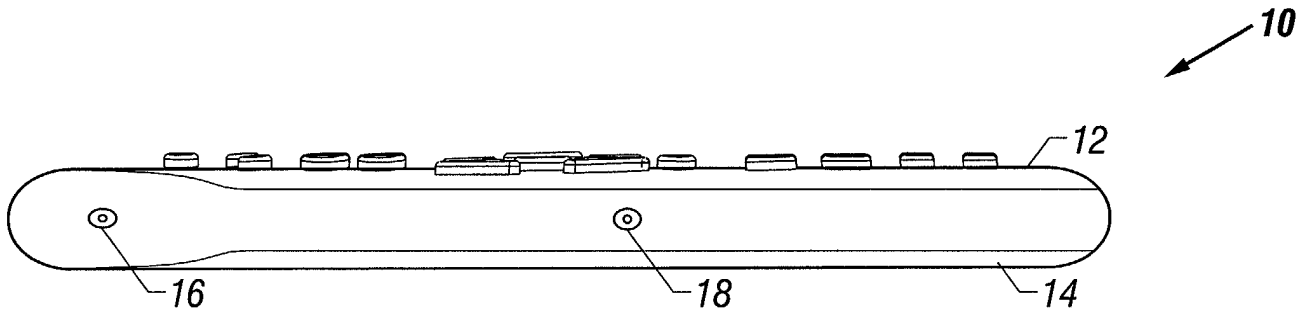

FIG. 1

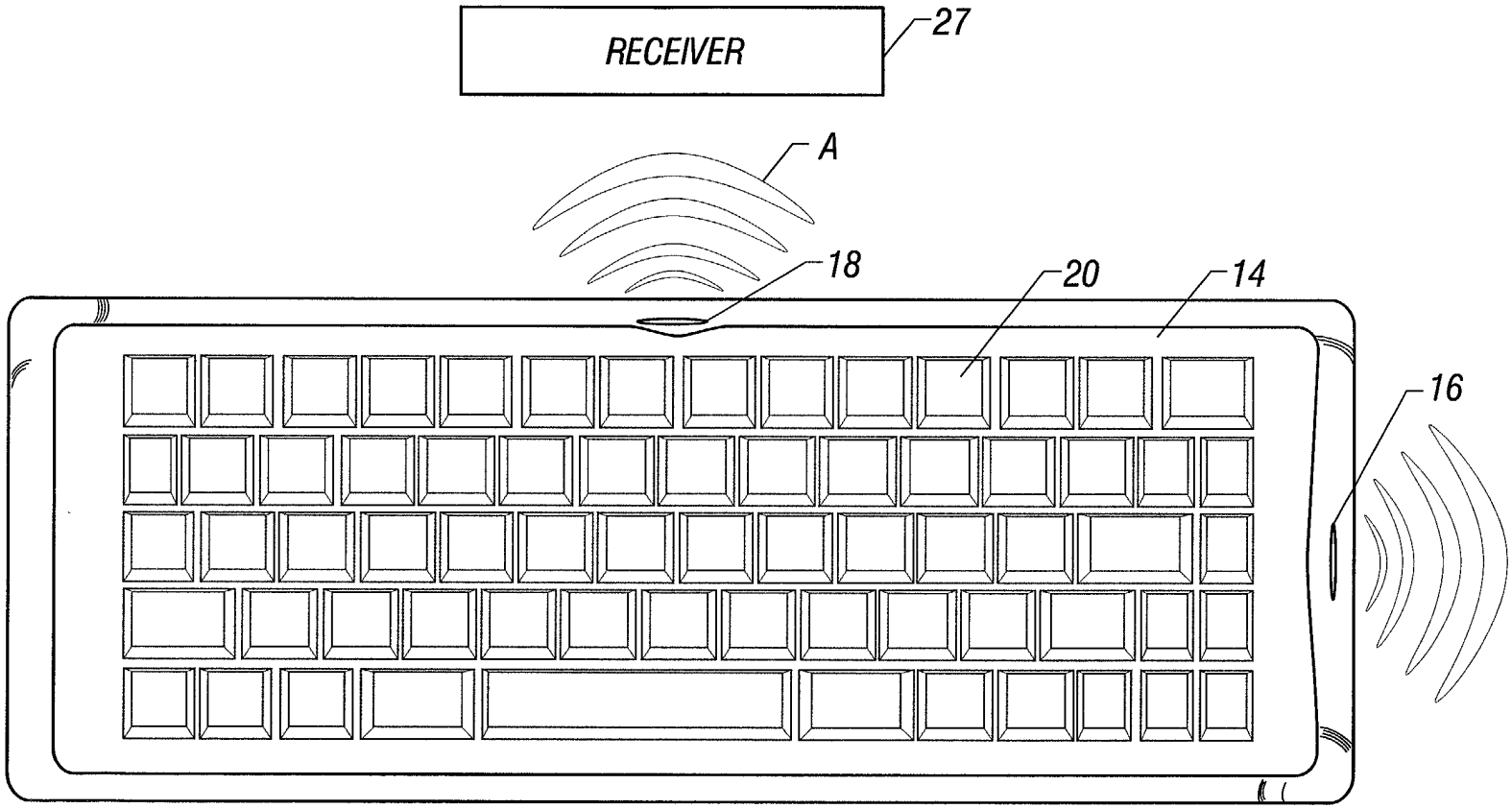

FIG. 2

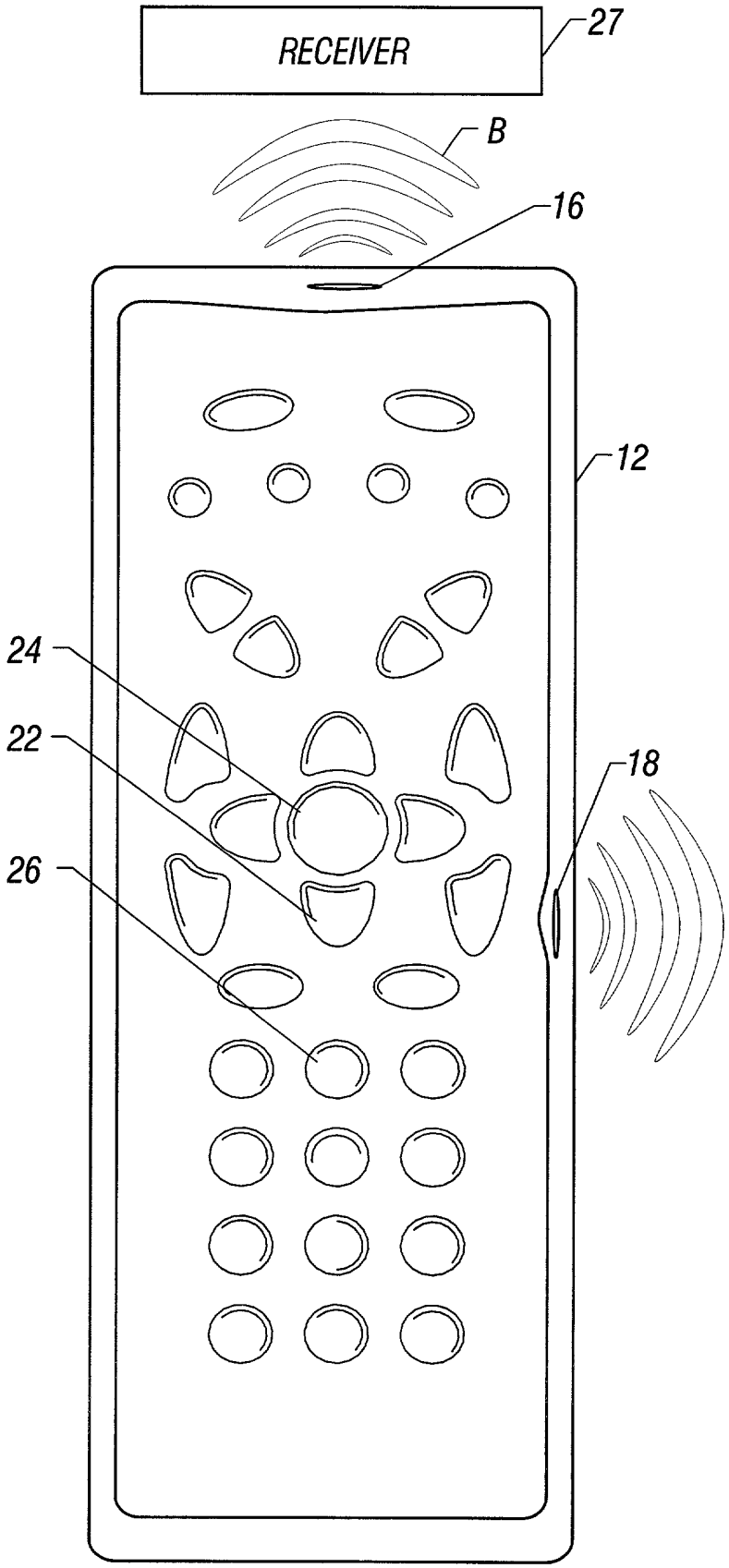

FIG. 3

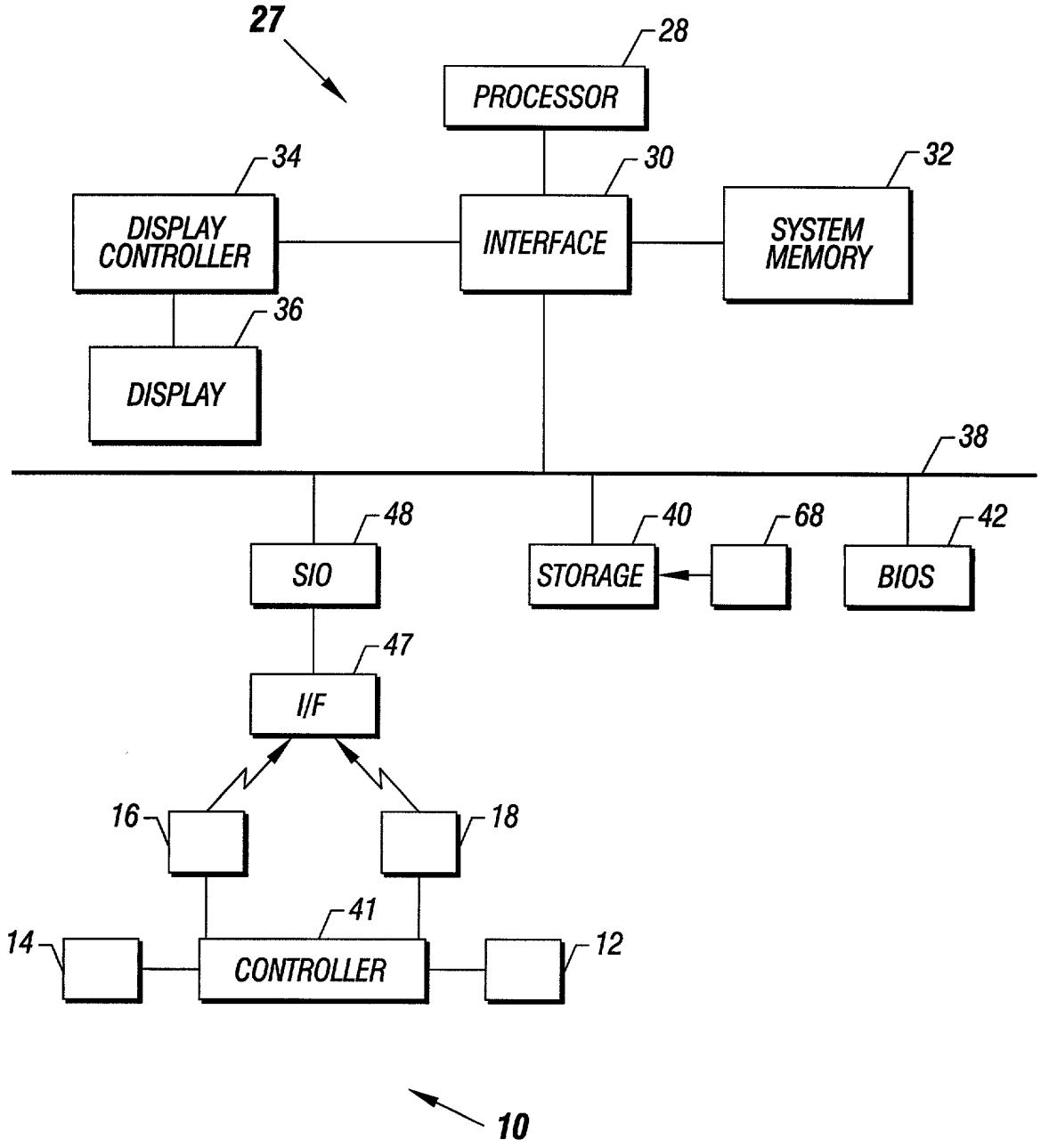
27
28
PROCESSOR
34
30
32
DISPLAY CONTROLLER
INTERFACE
SYSTEM MEMORY
36
DISPLAY
38
48
40
68
42
SIO
STORAGE
BIOS
47
I/F
16
18
41
14
CONTROLLER
12
10

FIG. 4

Attorney's Docket No.: INTL-0359-P1 -US (P7596X) PATENT

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

CONTROLLING WIRELESS PERIPHERALS FOR PROCESSOR-BASED SYSTEMS

the specification of which

X	is attached hereto.
	was filed on _____ as
	United States Application Number _____
	or PCT International Application Number _____
	and was amended on _____
	(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate Issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
Number	(Country)	(Day/Month/Year Filed)	Yes	No
Number	(Country)	(Day/Month/Year Filed)	Yes	No
Number	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under title 35, United States Code, Section 119(e) of the United States provisional application(s) listed below:

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

09/405,575	09/27/1999	Pending
(Application Number)	Filing Date	(Status-patented, pending, abandoned)
(Application Number)	Filing Date	(Status-patented, pending, abandoned)

I hereby appoint Timothy N. Trop, Reg. No. 28,994; Fred G. Pruner, Jr., Reg. No. 40,779 and Dan C. Hu, Reg. No. 40,025 my patent attorneys, of TROP, PRUNER & HU, P.C., with offices located at 8554 Katy Freeway, Ste. 100, Houston, TX 77024, telephone (713) 468-8880, and Joseph R. Bond, Reg. No. 36,458; Richard C. Calderwood, Reg. No. 35,468; Sean Fitzgerald, Reg. No. 32,027; David J. Kaplan, Reg. No. 41,105; Leo V. Novakoski, Reg. No. 37,198; Naomi Obinata, Reg. No. 39,320; Thomas C. Reynolds, Reg. No. 32,488; Steven P. Skabrat, Reg. No. 36,279; Howard A. Skaist, Reg. No. 36,008; Steven C. Stewart, Reg. No. 33,555; Raymond J. Werner, Reg. No. 34,752; and Charles K. Young, Reg. No. 39,425; my patent attorneys, of INTEL CORPORATION; with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to Timothy N. Trop, TROP, PRUNER & HU, P.C., 8554 Katy Freeway, Ste. 100, Houston, TX 77024 and direct telephone calls to Timothy N. Trop, (713) 468-8880.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor: **EDWARD O. CLAPPER**	
Inventor's Signature: Edward O. Clapper	Date: March 10, 2000
Residence: **TEMPE, ARIZONA**	Citizenship: **U.S.**
Post Office Address: **101 EAST RIVIERA DRIVE, TEMPE, ARIZONA 85226**	

INTL-0359-P1 -US (P7596X)